Subject Description Form

Subject Code	AMA269
Subject Title	Probability & Distributions
Credit Value	3
Level	2
Pre-requisite/ Co-requisite/ Exclusion	Co-requisite: Calculus (AMA150) Exclusion : Probability and Distributions (AMA2691)
Objectives	This subject is to provide students with basic probability theory and enable them to apply it in investment science. In particular, the students are to become familiar with various families of probability distributions and their properties.
Intended Learning Outcomes	Upon satisfactory completion of the subject, students should be able to: 1. develop the concepts of probability theory and random variables; 2. construct probability models in situations with uncertainty; 3. get familiar with various families of discrete and continuous distributions; 4. calculate probabilities, moments and other related quantities based on given distributions; 5. apply the acquired knowledge and techniques in probability and distribution theories to deal with problems in investment science.
Subject Synopsis/ Indicative Syllabus	*Probability (9 hours)* Sample space, events, probability, conditional probability, independence, Bayes theorem. *Random variables and distributions (21 hours)* Random variables, independence of random variables; probability distributions: probability, density and cumulative distribution functions, various families of discrete and continuous distributions; expectation and variance, moments and moment-generating function; joint, marginal and conditional distributions; transformation of random variables. *Sampling theory (12 hours)* Sampling distributions, normal, *t*, chi-square and *F* distributions.
Teaching/Learning Methodology	The subject will be delivered mainly through lecturers and tutorials. The lectures will be conducted to introduce the basic probability and distributions concepts in the syllabus, which are then reinforced by learning activities involving demonstration, tutorial exercise and assignments.

Assessment Methods in Alignment with Intended Learning Outcomes

Specific assessment methods	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)				
		1	2	3	4	5
a. Assignments	10%	✓	✓	✓	✓	✓
b. Tests	30%	✓	✓	✓	✓	✓
c. Examination	60%	✓	✓	✓	✓	✓
Total	100 %					

Continuous Assessment comprises of assignments and test. A written examination is held at the end of the semester.

To pass this subject, students are required to obtain Grade D or above in **both** the Continuous Assessment and the Examination components.

Student Study Effort Required

Class contact:	
▪ Lecture	28 Hrs.
▪ Tutorial	14 Hrs.
Other student study effort:	
▪ Assignment	20 Hrs.
▪ Self-study	58 Hrs.
Total student study effort	120 Hrs.

Reading List and References

Textbooks:

Pang, Leung, Hou, Li	Introduction to Probability and Distributions, 2nd edition	Thomson 2010
Sheldon Ross	A first course in Probability	Prentice Hall
Hogg, R.V. & Tanis, E.A.	Probability and Statistical Inference 8th edition	Prentice Hall 2009